

IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A resource and admission control subsystem in a next generation network (NGN), comprising:

an Access Admission Control Function (A-ACF), ~~which is used~~ configured to receive a first resource reservation request from an application service media flow for ~~[[the]]~~a transport layer of the ~~[[network]]~~NGN, perform an authentication and make a first admission control decision for the first resource reservation request based on a user profile, operation policy rules, and a transport resource availability, and control an Access Border Gateway Function (A-BGF) at ~~[[the]]~~a border between ~~[[the]]~~an access network of the NGN and ~~[[the]]~~a core network of the NGN in accordance with a result of the first admission control decision ~~[[result]]~~;

an Interconnection Admission Control Function (I-ACF), ~~which is used~~ configured to receive a second resource reservation request from a cross-operator application service media flow for the transport layer of the ~~[[network]]~~NGN, perform an authentication and make a second admission control decision for the second resource reservation request based on the user profile, the operation policy rules, and the transport resource availability, and control an Interconnection Border Gateway Function (I-BGF) at ~~[[the]]~~a border between ~~[[the]]~~two core networks of the NGN in accordance with a result of the second admission control decision ~~[[result]]~~;

a Resource Control Function in access network (A-RCF), configured to check the transport resource availability in accordance with a first transport resource availability check request from the A-ACF, perform checking and resource allocation on the basis of a resource status database, update the resource allocation status, and return a first check result of the transport resource availability;

a Resource Control Function in core network (C-RCF), configured to check the transport resource availability in accordance with a second transport resource availability check request from the A-ACF or the I-ACF, perform checking and resource allocation on the basis of the resource status database, update the resource

allocation status, and return a second check result of the transport resource availability;

a Gq interface;

a Go interface;

an Id interface; and

a G3 interface;

wherein an application service control function in ~~[[each]]~~ a NGN application service subsystem interacts with the A-ACF via the Gq interface, in order to send ~~[[the]]~~ resource reservation requirements of the application service media flow for the transport layer to the A-ACF through the first resource reservation request;

wherein the A-ACF controls the A-BGF at the border between the access network and the core network via the Go interface, in accordance with the result of the first admission control decision ~~[[result]]~~, to perform the functions of: gate opening or closing, ~~the "gate" indicating wherein the gate indicates a~~ packet filtering by IP address/port, packet marking for outbound traffic, bandwidth reservation and allocation for inbound/outbound traffic, IP address and port translation, policing of inbound traffic, packet filtering-based firewall, and measurement of usage, for the application service media flow;

wherein an interconnection border control function (I-BCF) interacts with the I-ACF via the Id interface, in order to send the resource reservation requirements of the cross-operator application service media flow for the transport layer to the I-ACF through the second resource reservation request;

wherein the I-ACF controls ~~the-an~~ Interconnection Border Gateway Function (I-BGF) at the border between the two core networks via the G3 interface, in accordance with the result of the second admission control decision ~~[[result]]~~, to perform the functions of gate opening or closing, packet marking for outbound traffic, bandwidth reservation and allocation for inbound/outbound traffic, IP address and port translation, policing of inbound traffic, packet filtering-based firewall, and measurement of usage, for the cross-operator application service media flow,

and wherein the A-ACF, I-ACF, A-RCF and C-RCF are logical functional

entities, which are separate physical devices or functional modules integrated in other physical devices.

2. (Currently Amended) The resource and admission control subsystem ~~in a next generation network~~ according to claim 1, ~~further comprising:~~

~~a Resource Control Function in access network (A-RCF), which acquires wherein the A-RCF is further configured to acquire status information including topology and bandwidth of transport resources in the access network, [[controls]] control QoS-related traffic handling and resource reservation activities of a Traffic Plane Function in access network (A-TPF), [[maintains]] maintain a database of transport resource availability and resource allocation status, checks the transport resource availability in accordance with the resource reservation request from the A-ACF, performs checking and resource allocation on the basis of the resource status database, updates the resource allocation status, and returns the check result of transport resource availability;~~

~~a Resource Control Function in core network (C-RCF), which acquires wherein the A-RCF is further configured to acquire status information including topology and bandwidth of transport resources in the core network, [[controls]] control QoS-related traffic handling and resource reservation activities of a Traffic Plane Function in core network (C-TPF), [[maintains]] maintain a database of transport resource availability and resource allocation status, checks the transport resource availability in accordance with the resource reservation request from the A-ACF or I-ACF, performs checking and resource allocation on the basis of the resource status database, updates the resource allocation status, and returns the check result of transport resource availability;~~

and the resource and admission control subsystem further comprising:

a G2 interface;

a G1 interface;

an X1 interface; and

an X2 interface;

wherein the C-RCF acquires transport resource status information in the core network via the G2 interface, and controls QoS-related traffic handling and resource reservation activities of the C-TPF;

the A-RCF acquires transport resource status information in the access network via the G1 interface, and controls QoS-related traffic handling and resource reservation activities of the A-TPF;

the A-RCF interacts with the A-ACF via the X1 interface, to receive the transport resource availability check request from the A-ACF and return the first check result of the transport resource availability in the access network to the A-ACF; and

the C-RCF interacts with the A-ACF via the X2 interface, to receive the transport resource availability check request from the A-ACF and return the second check result of the transport resource availability in the core network to the A-ACF.

3. (Currently Amended) The resource and admission control subsystem ~~in a next generation network~~ according to claim 1, further comprising an X3 interface, wherein the C-RCF interacts with the I-ACF via the X3 interface, to receive the transport resource availability check request from the I-ACF and return the second check result of transport resource availability in the access network to the I-ACF.

4. (Currently Amended) The resource and admission control subsystem ~~in a next generation network~~ according to claim 1, further comprising an X4 interface, wherein the I-ACF interacts with a Resource and Admission Control Subsystem (RACS) in any other operator network via the X4 interface, to forward the resource reservation request of cross-operator application service media flows.

5. (Currently Amended) The resource and admission control subsystem ~~in a next generation network~~ according to claim 1, further comprising an I1 interface, wherein the A-ACF interacts with a Network Attachment Subsystem (NASS) via the I1

interface, to obtain user profiles.

6. (Canceled)

7. (Currently Amended) The resource and admission control subsystem ~~in a next generation network~~ according to claim 1, wherein

in each network administrative domain, a centralized Resource Control Function (RCF) or a plurality of RCFs distributed in sub-domains are provided in accordance with the network scale and the type of transport technology;

if a plurality of RCFs distributed in the sub-domains are provided in one administrative domain, the RCFs can interact and coordinate with each other via a universal and extensible protocol interface, so as to accomplish checking of edge-to-edge transport resource availability for the resource reservation request across the entire administrative domain, wherein the RCF is A-RCF or C-RCF.

8. (Currently Amended) The resource and admission control subsystem ~~in a next generation network~~ according to claim 1, wherein

Resource Control Functions (RCFs) in different network administrative domains are interconnected via Admission Control Functions (ACFs); if there is a trusting relationship between the different network administrative domains, the RCFs in the different network administrative domains interface to each other, and exchange information with each other, wherein the ACF is A-ACF or I-ACF and the RCF is A-RCF or C-RCF.

9. (Currently Amended) A method for resource and admission control in a next generation network, comprising ~~the steps of:~~

after receiving a resource reservation request from a Gq interface, performing an authentication by an Access Admission Control Function (A-ACF), to check whether the resource reservation request conforms to operation policy rules

and whether the resource reservation request conforms to user profiles;

if a Resource Control Function in access network (A-RCF) is provided, forwarding the resource reservation request from the A-ACF to the A-RCF via an X1 interface to check the transport resource availability in the access network, and obtaining ~~[[the]]~~ a first check result of transport resource availability in the access network from the A-RCF; the first check result carrying QoS class, bandwidth and ingress path information assigned to an application service media flow;

if the application service media flow is towards a core network and a Resource Control Function in core network (C-RCF) is provided, forwarding the resource reservation request from the A-ACF to the C-RCF via an X2 interface to check the transport resource availability in the core network, and obtaining ~~[[the]]~~ a second check result of transport resource availability in the core network from the C-RCF; the second check result carrying QoS class, bandwidth and ingress path information assigned to the application service media flow;

making an admission control decision by the A-ACF in accordance with the check result of operation policy rules, the check result of user profiles, the first check result of transport resource availability and the second check result of transport resource availability, and determining admission control parameters for the application service media flow; the admission control parameters including gate control, bandwidth allocation, QoS marking, and ingress path information;

returning the ~~authentication and~~ admission control decision result for the resource reservation request from the A-ACF to an application service control function via a Gq interface;

if the admission control decision result is "permit", sending the admission control parameters from the A-ACF to an Access Border Gateway Function (A-BGF) in push or pull mode via a Go interface, to control gate operations, packet marking, and traffic mapping at the A-BGF.

10. (Currently Amended) The method ~~for resource and admission control~~ according to

claim 9, wherein ~~the step of~~ performing an authentication by an Access Admission Control Function (A-ACF), to check whether the resource reservation request conforms to operation policy rules and whether the resource reservation request conforms to user profiles further comprises ~~the steps of~~:

if the operation policy rules are not stored locally, the A-ACF searches in a remote policy server, to obtain operation policy rules related with the service.

11. (Currently Amended) The method ~~for resource and admission control~~ according to claim 9, wherein ~~the step of~~ performing authentication by an Access Admission Control Function (A-ACF), to check whether the resource reservation request conforms to operation policy rules and whether the resource reservation request conforms to user profiles further comprises ~~the steps of~~:

if the user profiles are not stored locally, the A-ACF interacts with a Network Attachment Subsystem (NASS) via the I1 interface, to obtain user profiles related with the service.

12. (Currently Amended) The method ~~for resource and admission control~~ according to claim 9, wherein for any cross-operator application service media flow, the method further comprises ~~the following steps~~:

after receiving a second resource reservation request via an Id interface, performing authentication by an I-ACF, to check whether the second resource reservation request conforms to a Service Level Agreement (SLA), the operation policy rules, and the transport resource availability of interconnecting link between operators;

if the application service media flow is towards the core network and a C-RCF is provided in the core network, forwarding the second resource reservation request from the I-ACF to the C-RCF via an X3 interface to check the transport resource availability in the core network, and obtaining the check result of transport resource availability in the core network from the C-RCF; the check result carrying QoS class,

bandwidth and ingress path information assigned to the application service media flow;

making ~~[[an]]~~ a second admission control decision by the I-ACF in accordance with ~~[[the]]~~a check result of service level agreement, ~~[[the]]~~ a second check result of operation policy rules, and ~~[[the]]~~a check result of transport resource availability between operators, and determining ~~[[the]]~~ second admission control parameters for the cross-operator application service media flow; the second admission control parameters including gate control, bandwidth allocation, QoS class, and ingress path information;

returning the ~~authentication and second~~ admission control decision result for the second resource reservation request from the I-ACF to an Interconnection Border Control Function (IBCF) via the Id interface;

if the second admission control decision result is "permit", the I-ACF sending the second admission control parameters to an Interconnection Border Gateway Function (I-BGF) in push or pull mode via a G3 interface, to control gate operations, packet marking, and traffic policing at the I-BGF.

13. (Currently Amended) The method ~~for resource and admission control~~ according to claim 9, further comprising ~~the steps of~~:

during ~~[[the]]~~a process of creating ~~[[the]]~~an application service session, the application service control function determining the resource reservation requirements of the application service media flow and sending ~~[[a]]~~the resource reservation request containing the resource reservation requirements to the A-ACFs ~~at initiating end and destination end of the media flow~~ via the Gq interface, ~~respectively~~;

during the process of the application service session ~~process~~, the application service control function sending a resource reservation modification request to the A-ACFs ~~at the initiating end and the destination end of the media flow~~ via the Gq interface as required, to instruct the A-ACFs to modify ~~[[the]]~~ original resource reservation and admission control parameters;

when the application service session is completed, the application service

control function sending a resource release request to the A-ACFs ~~at the initiating side and the destination side of the media flow~~ via the Gq interface, to instruct the A-ACFs to release the original resource reservation and admission control parameters.

14. (Currently Amended) The method ~~for resource and admission control~~ according to claim 13, wherein for any cross-operator application service media flow, the method further comprises ~~the steps of:~~

during ~~[[the]]~~ a process of creating a session of the cross-operator application service, ~~the~~ IBCF determining the resource reservation requirements of the cross-operator application service media flow and sending a second resource reservation request containing the requirements to the I-ACF via the Id interface;

during the session of the cross-operator application service, the IBCF sending a resource reservation modification request to the I-ACF via the Id interface as required, to instruct the I-ACF to modify the original resource reservation and admission control parameters;

when the session of the cross-operator application service is completed, the IBCF sending a second resource release request to the I-ACF via the Id interface, to instruct the I-ACF to release the original resource reservation and admission control parameters.

15. (Canceled)

16. (Canceled)

17. (Currently Amended) The resource and admission control subsystem ~~in a next generation network~~ according to claim 2, wherein

in each network administrative domain, a centralized Resource Control Function (RCF) or a plurality of RCFs distributed in sub-domains are provided in accordance with the network scale and the type of transport technology;

if a plurality of RCFs distributed in the sub-domains are provided in one administrative domain, the RCFs can interact and coordinate with each other via a universal and extensible protocol interface, so as to accomplish checking of edge-to-edge transport resource availability for the resource reservation request across the entire administrative domain, wherein the RCF is A-RCF or C-RCF.

18. (Currently Amended) The resource and admission control subsystem ~~in a next generation network~~ according to claim 2, wherein

Resource Control Functions (RCFs) in different network administrative domains are interconnected via Admission Control Functions (ACFs); if there is a trusting relationship between the different network administrative domains, the RCFs in the different network administrative domains interface to each other, and exchange information with each other, wherein the ACF is A-ACF or I-ACF and the RCF is A-RCF or C-RCF.

19-20. (Canceled)

21. (Currently Amended) A resource and admission control subsystem in a next generation network (NGN), comprising:

an Access Admission Control Function (A-ACF), ~~which is used~~ configured to receive a first resource reservation request from an application service media flow, perform an authentication and make a first admission control decision for the first resource reservation request based on user profile, operation policy rules, and transport resource availability, and control an Access Border Gateway Function (A-BGF) between ~~[[the]]~~ an access network of the NGN and ~~[[the]]~~ a core network of the NGN in accordance with a result of the first admission control decision ~~[[result]]~~;

an Interconnection Admission Control Function (I-ACF), ~~which is used~~ configured to receive a second resource reservation request from a cross-operator application service media flow, perform an authentication and make a second

admission control decision for the second resource reservation request based on a user profile, operation policy rules, and a transport resource availability, and control an Interconnection Border Gateway Function (I-BGF) between [[the]] core networks of the NGN in accordance with a result of the second admission control decision [[result]];

a Resource Control Function in access network (A-RCF), configured to check the transport resource availability in accordance with a first transport resource availability check request from the A-ACF, perform checking and resource allocation on the basis of a resource status database, update the resource allocation status, and return a first check result of the transport resource availability;

a Resource Control Function in core network (C-RCF), configured to check the transport resource availability in accordance with a second transport resource availability check request from the A-ACF or the I-ACF, perform checking and resource allocation on the basis of the resource status database, update the resource allocation status, and return a second check result of the transport resource availability;

a Gq interface;

a Go interface;

an Id interface; and

a G3 interface;

wherein an application service control function in [[each]] a NGN application service subsystem interacts with the A-ACF via the Gq interface, in order to send [[the]] resource reservation requirements of the application service media flow to the A-ACF through the first resource reservation request;

wherein the A-ACF controls the A-BGF via the Go interface;

wherein an interconnection border control function (IBCF) sends the resource reservation requirements of the cross-operator application service media flow to the I-ACF through the second resource reservation request via the Id interface;

and wherein the I-ACF controls the I-BGF via the G3 interface.